F-15-591-A
February, 2001

INSTRUCTION MANUAL
453cc & 553cc
DC WELDING POWER SOURCES



This manual provides complete instructions for the following power sources:

	453cc Item No.	553cc Item No.
ESAB 230/460 vac, 3 ph., 60 Hz	453cc - 0558001274	553cc - 0558001278
ESAB 230/460/575 vac, 3ph., 60 Hz	453cc - 0558001275	553cc - 0558001279
ESAB 220/400 vac, 3 ph., 50 Hz	453cc - 0558001276	553cc - 0558001280
ESAB 220/400 vac, 3 ph., 50 Hz, CE	453cc - 0558001277	553cc - 0558001281

CAUTION

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding equipment, we urge you to read our booklet, "Precautions and Safe Practices for Arc Welding, Cutting, and Gouging," Form 52-529. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions before installing or operating this equipment.

Be sure this information reaches the operator.
You can get extra copies through your supplier.

ESAB® ESAB Welding & Cutting Products

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning or poorly maintained equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to the Authorized Distributor from whom it was purchased.

This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.

PREFACE

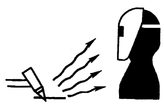
The purpose of this manual is to provide the operator with information required to install and operate the power source. Some technical reference material is also provided to assist in basic troubleshooting the power source. If it is determined that the power source is not operating properly, the operator should contact ESAB at (843) 664-4416 for assistance.

The following is a list of terms/acronyms used throughout this manual.

CC	Constant Current
CV	Constant Voltage
GMAW	Gas Metal Arc Welding, CV mode (same as MIG)
GMAW-P	Gas Metal Arc Welding - Pulsed, CV mode (same as pulsed MIG)
GTAW	Gas Tungsten Arc Welding, CC mode (same as TIG)
MIG	Metal Inert Gas, CV mode (same as GMAW)
SMAW	Shielded Metal Arc Welding, CC mode (same as Stick)
Stick	Stick Welding, CC mode (same as SMAW)
TIG	Tungsten Inert Gas, CC mode (same as GTAW)

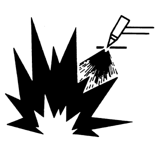
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WARNING: These Safety Precautions are for your protection. They summarize precautionary information from the references listed in Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.



PROTECT YOURSELF AND OTHERS -- Some welding, cutting, and gouging processes are noisy and require ear protection. The arc, like the sun, emits ultraviolet (UV) and other radiation and can injure skin and eyes. Hot metal can cause burns. Training in the proper use of the processes and equipment is essential to prevent accidents. Therefore:

1. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields, and goggles are also required.
2. Use a face shield fitted with the correct filter and cover plates to protect your eyes, face, neck, and ears from sparks and rays of the arc when operating or observing operations. Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.
3. Wear flameproof gauntlet type gloves, heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap for hair protection, to protect against arc rays and hot sparks or hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
4. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned, and open pockets eliminated from the front of clothing
5. Protect other personnel from arc rays and hot sparks with a suitable non-flammable partition or curtains.
6. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses.



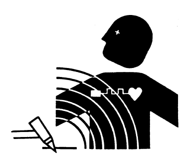
FIRES AND EXPLOSIONS -- Heat from flames and arcs can start fires. Hot slag or sparks can also cause fires and explosions. Therefore:

1. Remove all combustible materials well away from the work area or cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings, paper, etc.
2. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal.“
3. Do not weld, cut or perform other hot work until the workpiece has been completely cleaned so that there are no substances on the workpiece which might produce flammable or toxic vapors. Do not do hot work on closed containers. They may explode.
4. Have fire extinguishing equipment handy for instant use, such as a garden hose, water pail, sand bucket, or portable fire extinguisher. Be sure you are trained in its use.
5. Do not use equipment beyond its ratings. For example, overloaded welding cable can overheat and create a fire hazard.
6. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.
7. For additional information, refer to NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.



ELECTRICAL SHOCK -- Contact with live electrical parts and ground can cause severe injury or death. DO NOT use AC welding current in damp areas, if movement is confined, or if there is danger of falling.

1. Be sure the power source frame (chassis) is connected to the ground system of the input power.
2. Connect the workpiece to a good electrical ground.
3. Connect the work cable to the workpiece. A poor or missing connection can expose you or others to a fatal shock.
4. Use well-maintained equipment. Replace worn or damaged cables.
5. Keep everything dry, including clothing, work area, cables, torch/electrode holder, and power source.
6. Make sure that all parts of your body are insulated from work and from ground.
7. Do not stand directly on metal or the earth while working in tight quarters or a damp area; stand on dry boards or an insulating platform and wear rubber-soled shoes.
8. Put on dry, hole-free gloves before turning on the power.
9. Turn off the power before removing your gloves.
10. Refer to ANSI/ASC Standard Z49.1 (listed on next page) for specific grounding recommendations. Do not mistake the work lead for a ground cable.



ELECTRIC AND MAGNETIC FIELDS — May be dangerous. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and cutting current creates EMF around welding cables and welding machines. Therefore:

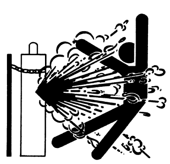
1. Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
2. Exposure to EMF may have other health effects which are unknown.
3. Welders should use the following procedures to minimize exposure to EMF:
   A. Route the electrode and work cables together. Secure them with tape when possible.
   B. Never coil the torch or work cable around your body.
   C. Do not place your body between the torch and work cables. Route cables on the same side of your body.
   D. Connect the work cable to the workpiece as close as possible to the area being welded.
   E. Keep welding power source and cables as far away from your body as possible.

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FUMES AND GASES -- Fumes and gases, can cause discomfort or harm, particularly in confined spaces. Do not breathe fumes and gases. Shielding gases can cause asphyxiation. Therefore:

1. Always provide adequate ventilation in the work area by natural or mechanical means. Do not weld, cut, or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead, beryllium, or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes from these materials.
2. Do not operate near degreasing and spraying operations. The heat or arc rays can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas, and other irritant gases.
3. If you develop momentary eye, nose, or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.
4. Refer to ANSI/ASC Standard Z49.1 (see listing below) for specific ventilation recommendations.
5. **WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code §25249.5 et seq.)**



CYLINDER HANDLING -- Cylinders, if mishandled, can rupture and violently release gas. Sudden rupture of cylinder, valve, or relief device can injure or kill. Therefore:

1. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adaptors. Maintain hoses and fittings in good condition. Follow manufacturer's operating instructions for mounting regulator to a compressed gas cylinder.
2. Always secure cylinders in an upright position by chain or strap to suitable hand trucks, undercarriages, benches, walls, post, or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
3. When not in use, keep cylinder valves closed. Have valve protection cap in place if regulator is not connected. Secure and move cylinders by using suitable hand trucks. Avoid rough handling of cylinders.
4. Locate cylinders away from heat, sparks, and flames. Never strike an arc on a cylinder.
5. For additional information, refer to CGA Standard P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders", which is available from Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.

EQUIPMENT MAINTENANCE -- Faulty or improperly maintained equipment can cause injury or death. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting, and maintenance work. Do not perform any electrical work unless you are qualified to perform such work.
2. Before performing any maintenance work inside a power source, disconnect the power source from the incoming electrical power.
3. Maintain cables, grounding wire, connections, power cord, and power supply in safe working order. Do not operate any equipment in faulty condition.
4. Do not abuse any equipment or accessories. Keep equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres and inclement weather.
5. Keep all safety devices and cabinet covers in position and in good repair.
6. Use equipment only for its intended purpose. Do not modify it in any manner.

ADDITIONAL SAFETY INFORMATION -- For more information on safe practices for electric arc welding and cutting equipment, ask your supplier for a copy of "Precautions and Safe Practices for Arc Welding, Cutting and Gouging", Form 52-529.

The following publications, which are available from the American Welding Society, 550 N.W. LeJuene Road, Miami, FL 33126, are recommended to you:

1. ANSI/ASC Z49.1 - "Safety in Welding and Cutting"
2. AWS C5.1 - "Recommended Practices for Plasma Arc Welding"
3. AWS C5.2 - "Recommended Practices for Plasma Arc Cutting"
4. AWS C5.3 - "Recommended Practices for Air Carbon Arc Gouging and Cutting"
5. AWS C5.5 - "Recommended Practices for Gas Tungsten Arc Welding“
6. AWS C5.6 - "Recommended Practices for Gas Metal Arc Welding"“
7. AWS SP - "Safe Practices" - Reprint, Welding Handbook.
8. ANSI/AWS F4.1, "Recommended Safe Practices for Welding and Cutting of Containers That Have Held Hazardous Substances."

MEANING OF SYMBOLS - As used throughout this manual: Means Attention! Be Alert! Your safety is involved.

DANGER **Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.**

WARNING **Means potential hazards which could result in personal injury or loss of life.**

CAUTION **Means hazards which could result in minor personal injury.**

PRÉCAUTIONS DE SÉCURITÉ

AVERTISSEMENT: Ces règles de sécurité ont pour objet d' assurer votre protection. Veillez à lire et à observer les précautions énoncées ci-dessous avant de monter l' équipement ou de commercer à l'utiliser. Tout défaut d'observation de ces précautions risque d'entraîner des blessures graves ou mortelles.

1. PROTECTION INDIVIDUELLE-- Les brûlures de la peau et des yeux dues au rayonnement de l'arc électrique ou du métal incandescent, lors du soudage au plasma ou à l'électrode ou lors du gougeage à l'arc, peuvent s'avérer plus graves que celles résultant d'une exposition prolongée au soleil. Aussi convient-il d'observer les précautions suivantes:

a. Portez un écran facial adéquat muni des plaques protectrices et des verres filtrants appropriés afin de vous protéger les yeux, le visage, le cou et les oreilles des étincelles et du rayonnement de l'arc électrique lorsque vous effectuez des soudures ou des coupes ou lorsque vous en observez l'exécution.

   AVERTISSEZ les personnes se trouvant à proximité de façon à ce qu'elles ne regardent pas l'arc et à ce qu'elles ne s'exposent pas à son rayonnement, ni à celui du métal incandescent.

b. Portez des gants ignifugés à crispins, une tunique épaisse à manches longues, des pantalons sans rebord, des chaussures à embout d'acier et un casque de soudage ou une calotte de protection, afin d'éviter d'exposer la peau au rayonnement de l'arc électrique ou du métal incandescent. Il est également souhaitable d'utiliser un tablier ininflammable de façon à se protéger des étincelles et du rayonnement thermique.

c. Les étincelles ou les projections de métal incandescent risquent de se loger dans des manches retroussées, des bords relevés de pantalons ou dans des poches. Aussi convient-il de garder boutonnés le col et les manches et de porter des vêtements sans poches à l'avant.

d. Protégez des étincelles et du rayonnement de l'arc électrique les autres personnes travaillant à proximité à l'aide d'un écran ininflammable adéquat.

e. Ne jamais omettre de porter des lunettes de sécurité lorsque vous vous trouvez dans un secteur où l'on effectue des opérations de soudage ou de coupage à l'arc. Utilisez des lunettes de sécurité à écrans ou verres latéraux pour piquer ou meûler le laitier. Les piquetures incandescentes de laitier peuvent être projetées à des distances considérables. Les personnes se trouvant à proximité doivent également porter des lunettes de protection.

f. Le gougeage à l'arc et le soudage à l'arc au plasma produisent un niveau de bruit extrêmement élevé (de 100 à 114 dB) et exigent par conséquent l'emploi de dispositifs appropriés de protection auditive.

2. PRÉVENTION DES INCENDES-- Les projections de laitier incandescent ou d'étincelles peuvent provoquer de graves incendies au contact de matériaux combustibles solides, liquides ou gazeux. Aussi faut-il observer les précautions suivantes:

a. Éloigner suffisamment tous les matériaux combustibles du secteur où l'on exécute des soudures ou des coupes à l'arc, à moins de les recouvrir complètement d'une bâche non-inflammable. Ce type de matériaux comprend notamment le bois, les vêtements, la sciure, l'essence, le kérosène, les peintures, les solvants, le gaz naturel, l'acétylène, le propane et autres substances combustibles semblables.

b. Les étincelles ou les projections de métal incandescent peuvent tomber dans des fissures du plancher ou dans des ouvertures des murs et y déclencher une ignition lente cachée. Veiller à protéger ces ouvertures des étincelles et des projections de métal.

c. N'exécutez pas de soudures, de coupes, d'opérations de gougeage ou autres travaux à chaud à la surface de barils, bidons, réservoirs ou autres contenants usagés, avant de les avoir nettoyés de toute trace de substance susceptible de produire des vapeurs inflammables ou toxiques.

d. En vue d'assurer la prévention des incendies, il convient de disposer d'un matériel d'extinction prêt à servir immédiatement, tel qu'un tuyau d'arrosage, un seau à eau, un seau de sable ou un extincteur portatif.

e. Une fois le travail à l'arc terminé, inspectez le secteur de façon à vous assurer qu'aucune étincelle ou projection de métal incandescent ne risque de provoquer ultérieurement un feu.

3. CHOC ÉLECTRIQUE-- Le gougeage à l'arc et à l'arc au plasma exige l'emploi de tensions à vide relativement importantes; or, celles-ci risquent de causer des dommages corporels graves et même mortels en cas d'utilisation inadéquate. La gravité du choc électrique reçu dépend du chemin suivi par le courant à travers le corps humain et de son intensité.

a. Ne laissez jamais de surfaces métalliques sous tension venir au contact direct de la peau ou de vêtements humides. Veillez à porter des gants bien secs.

b. Si vous devez effectuer un travail sur une surface métallique ou dans un secteur humide, veillez à assurer votre isolation corporelle en portant des gants secs et des chaussures à semelles de caoutchouc et en vous tenant sur une planche ou une plate-forme sèche.

c. Mettez toujours à la terre le poste de soudage/coupage en le reliant par un câble à une bonne prise de terre.

d. N'utilisez jamais de câbles usés ou endommagés. Ne surchargez jamais le câble. Utilisez toujours un équipement correctement entretenu.

e. Mettez l'équipement hors tension lorsqu'il n'est pas en service. une mise à la masse accidentelle peut en effet provoquer une surchauffe de l'équipement et un danger d'incendie. Ne pas enrouler ou passer le câble autour d'une partie quelconque du corps.

f. Vérifiez si le câble de masse est bien relié à la pièce en un point aussi proche que possible de la zone de travail. Le branchement des câbles de masse à l'ossature du bâtiment ou en un point éloigné de la zone de travail augmente en effet le risque de passage d'un courant de sortie par des chaînes de

levage, des câbles de grue ou divers chemins électriques.

g. Empêchez l'apparition de toute humidité, notamment sur vos vêtements, à la surface de l'emplacement de travail, des câbles, du porte-électrode et du poste de soudage/coupage. Réparez immédiatement toute fuite d'eau.

4. VENTILATION-- La respiration prolongée des fumées résultant des opérations de soudage/coupage, à l'intérieur, d'un local clos, peut provoquer des malaises et des dommages corporels. Aussi convient-il d'observer les précautions suivantes:

a. Assurez en permanence une aération adéquate de l'emplacement de travail en maintenant une ventilation naturelle ou à l'aide de moyens mécaniques. N'effectuez jamais de travaux de soudage ou de coupage sur des matériaux de zinc, de plomb, de beryllium ou de cadmium en l'absence de moyens mécaniques de ventilation capables d'empêcher l'inhalation des fumées dégagées par ces matériaux.

b. N'effectuez jamais de travaux de soudage ou de coupage à proximité de vapeurs d'hydrocarbure chloré résultant d'opérations voisines de dégraissage ou de pulvérisation. La chaleur dégagée ou le rayonnement de l'arc peut déclencher la formation de phosgène -- gaz particulièrement toxique -- et d'autres gaz irritants, à partir des vapeurs de solvant.

c. Une irritation momentanée des yeux, du nez ou de la gorge constatée au cours de l'utilisation de l'équipement dénote un défaut de ventilation. Arrêtez-vous de travailler afin de prendre les mesures nécessaires à l'amélioration de la ventilation. Ne poursuivez pas l'opération entreprise si le malaise persiste.

d. Certaines commandes comportent des canalisations où circule de l'hydrogène. L'armoire de commande est munie d'un ventilateur destiné à empêcher la formation de poches d'hydrogène, lesquelles présentent un danger d'explosion; ce ventilateur ne fonctionne que si l'interrupteur correspondant du panneau avant se trouve placé en position ON (Marche). Veillez à manœuvrer cette commande en vérifiant si le couvercle est bien en place, de façon à assurer l'efficacité de la ventilation ainsi réalisée. Ne jamais débrancher le ventilateur.

e. Les fumées produites par l'opération de soudage ou de coupage peuvent s'avérer toxiques. Aussi est-il nécessaire de disposer en permanence d'un dispositif adéquat de ventilation de type aspirant, afin d'éliminer du voisinage de l'opérateur tout dégagement de fumée visible.

f. Consultez les recommandations particulières en matière de ventilation indiquées à l'alinéa 6 de la norme Z49.1 de l'AWS.

5. ENTRETIEN DE L'ÉQUIPEMENT-- Un équipement entretenu de façon défectueuse ou inadéquate risque non seulement de réaliser un travail de mauvaise qualité mais, chose plus grave encore, d'entraîner des dommages corporels graves, voire mortels en déclenchant des incendies ou des chocs électriques. Observez par conséquent les précautions suivantes:

a. Efforcez-vous de toujours confier à un personnel qualifié l'installation, le dépannage et l'entretien du poste de soudage et de coupage. N'effectuez aucune réparation électrique sur l'équipement à moins d'être qua-lifié à cet effet.

b. Ne procédez jamais à une tâche d'entretien quelconque à l'intérieur du poste de soudage/coupage, avant d'avoir débranché l'alimentation électrique.

c. Maintenez en bon état de fonctionnement les câbles, le câble de masse, les branchements, le cordon d'alimentation et le poste de soudage/coupage. N'utilisez jamais le poste ou l'équipement s'il présente une défectuosité quelconque.

d. Prenez soin du poste de soudage et de coupage et des équipements accessoires. Gardez-les à l'écart des sources de charleur, notamment des fours, de l'humidité, des flaques d'eau maintenez-les à l'abri des traces d'huile ou de graisse, des atmosphères corrosives et des intempéries.

e. Laissez en place tous les dispositifs de sécurité et tous les panneaux de l'armoire de commande en veillant à les garder en bon état.

f. Utilisez le poste de soudage/coupage conformément à son usage prévu et n'effectuez aucune modification.

6. INFORMATIONS COMPLÉMENTAIRES RELATIVES À LA SÉCURITÉ--

Pour obtenir des informations complémentaires sur les règles de sécurité à observer pour le montage et l'utilisation d'équipements de soudage et de coupage électriques et sur les méthodes de travail recommandées, demandez un exemplaire du livret N° 52529 "Precautions and Safe Practices for Arc Welding, Cutting and Gouging" publié par ESAB. Nous conseillons également de consulter les publications sui-vantes, tenues à votre disposition par l'American Welding Society, 550 N.W. LeJuene Road, Miami, FL 32126:

a. "Safety in Welding and Cutting" AWS Z49.1

b. "Recommended Safe Practices for Gas-Shielded Arc Welding "AWS A6. 1.

c. "Safe Practices for Welding and Cutting Containers That Have Held Combustibles" AWS-A6.0.

d. "Recommended Safe Practices for Plasma Arc Cutting" AWS-A6. 3.

e. "Recommended Safe Practices for Plasma Arc Welding" AWS-C5. 1.

f. "Recommended Safe Practices for Air Carbon Arc Gouging and Cutting" AWS-C5. 3.

g. "Code For Safety in Welding and Cutting" CSA-Standard W117. 2.

1.1 GENERAL

This manual has been prepared for use by an experienced operator. It provides information to familiarize the operator with the design, installation and operation of the 482cc and 582cc model power sources. DO NOT attempt to install or operate this equipment until you have read and fully understood these instructions. The information presented here should be given careful consideration to ensure optimum performance of this equipment.

1.2 RECEIVING-HANDLING

Upon receipt, remove all packing material and carefully inspect for any damage that may have occurred during shipment. Any claims for loss or damage that may have occurred in transit must be filed by the purchaser with the carrier. A copy of the bill of lading and freight bill will be furnished by the carrier on request.

When requesting information concerning this equipment, it is essential that Item number, Serial number and Model number of the equipment be supplied.

1.3 DESCRIPTION

These power sources are designed for constant current Stick welding (SMAW), air carbon arc gouging (ACAG), and scratch start tig (GTAW). It can also be used for Mig spray arc (GMAW) and flux cored wire (FCAW) welding with an “off the arc”wire feeder. Table 1-1 outlines the electrical and physical specifications of the available models.

1.3.1 POWER SOURCE

The power source is a constant current, Silicon Controlled Rectifier (SCR), three phase, star-connected transformer/rectifier type dc unit with solid state contactor and control circuitry. It provides the volt-ampere characteristics desired for conventional Stick welding.

Table 1-1. Specifications for 453cc and 553cc

				453cc		553cc	
OPEN CIRCUIT VOLTAGE (Uo)				55 Vdc		57 Vdc	
DUTY CYCLE				60.00%	100.00%	60.00%	100.00%
RATED OUTPUT	Current (12)			450 A	350 A	550 A	450 A
	Voltage (U2)			38 Vdc	34 Vdc	42 Vdc	38 Vdc
RATED INPUT	3 Phase	60 Hz	Volts (U 1)	Current (11	Current (11	Current (11	Current (11)
			(208)230 Vac	70 A	58 A	86 A	74 A
			460 Vac	35A	29 A	43 A	37 A
			575 Vac	28A	23 A	34 A	30 A
		50 Hz	220/400 (380-415) Vac	73/40 (42-39) A	61/33 (35-30) A	90/49 (52-47) A	77/43 (45--41) A
Pow er Factor at Rated Output				83.00%		83.00%	
Welding Range				20A/20V to 450A/38Vdc		20A/20V to 550A/42Vdc	
Auxiliary Pow er				115 V ac @ 10 A, 60 Hz		115 V ac @ 10 A, 60 Hz	
PHYSICAL SPECIFICATIONS				60 Hz.	50 Hz.	60 Hz.	50 Hz.
Height (w ithout lifting eyebolt)				25.0" (62.2 cm)		25.0" (62.2 cm)	
Width				18.8" (48.3 cm)		18.8" (48.3 cm)	
Depth				32.5" (81.9 cm)		32.5" (81.9 cm)	
Net Weight				339lbs(154kg)	379lbs(172kg)	363 lbs (165 kg)	400 lbs (181 kg)
Shipping Weight				349 lbs (158 kg)	389 lbs (177 kg)	373 lbs (170 kg)	410 lbs (186 kg)

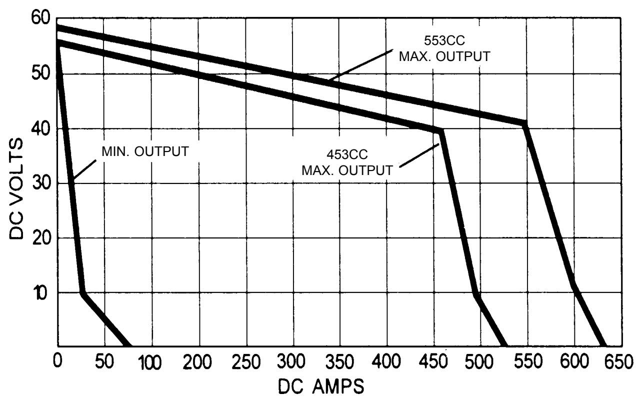
NOTE: The 453cc and 553cc may also operate from a 200 (208)- volt a.c. primary input using the 230 volt change over connections. However, when connected to this source (200-volt), the output is derated to 36 volts @ 400 amps (453cc) and to 38 volts @ 500 amps (553cc).

The 453cc and 553cc 50 Hz may operate from 380 vac or 415 vac primary input when using the 400 vac change over connection. When using this connection, the output voltage is derated from 38 v to 36 v (453cc) and 42 v to 38 v (553cc).

1.3.2 Volt-Ampere Characteristics

The curves shown in Figure 1-1 represent the volt-ampere static characteristics for the power source. These curves show the output voltage available at any given output current from the minimum to the maximum setting of the current control.

Figure 1.1 Volt/Ampere Curves



1.4 OPTIONAL ACCESSORIES

Stick Electrode Holder Assembly (21226)

Includes holder, 15-ft. cable, and twist lock connector.

Work Cable Assembly, 10-ft. (32995)

Includes ground clamp and twist lock connector.

Remote Control Receptacle (0558001436)

This Remote Control Kit consists of a 14 pin and 19 pin amphenol receptacle and assembly that permits the use of the HC-3B Remote Control, FC-5B Remote Foot Control , or TC-2B Torch Control, as described below for tig welding. The Remote Control Kit also provides a 115 vac 10Amp Receptacle for auxiliary power tools.

HC-3B Remote Hand Control (33838)

FC-5B Remote Foot Control (33646)

TC-2B Remote Torch Control (33839)

These controls provide remote output current control and contactor operation. Each control is equipped with 30 ft. (9.1 m) cable/plug assembly that mates with the optional Remote Control Kit described above. The current adjustment is limited to the range as set by the current control on the power source. The contactor and current panel/remote switches on the power source must be in remote position when operating with any of the remote controls.

TR-29 Truck Kit (37924)

This truck kit provides complete mobility of the power source. The kit consists of front castors, rear cylinder rack and wheels, gas cylinder bracket, cylinder chain, and pull handle.

Automatic Fan Kit (36707)

With this kit installed, the fan will start to operate when the welding arc is initiated and will continue to run for 5 minutes after the arc has been extinguished.

NOTE: This optional kit can only be installed in units manufactured after Serial No. MX-I709000 in which the large R5 resistor was moved from top center of the "A" frame to the base in front of the fan bracket.

1.5 SAFETY

Before the equipment is put into operation, the safety section at the front of this manual should be read completely. This will help avoid possible injury due to misuse or improper installation.

The definitions relating to the:

DANGER

WARNING

CAUTION

safety notations are described at the end of the Safety Section in the front of this manual - **read them and their specific text references carefully.**

2.1 LOCATION

A proper installation site is necessary for the power source to provide dependable service. A proper installation site permits freedom of air movement through the unit while minimizing exposure to dust, dirt, moisture, and corrosive vapors. A minimum of 18 inches (46 cm) is required between the side and rear panels of the power source and the nearest obstruction. Also, the underside of the power source must be kept completely free of obstructions.

The selected site should also allow easy removal of the power source outer enclosure for maintenance. See Table 1.1 for overall dimensions of the unit.

2.2 RECEIVING, UNPACKING AND PLACEMENT

A. Immediately upon receipt of the power source, inspect for damage which may have occurred in transit. Notify the carrier of any defects or damage.

B. Remove the power source from the container. Remove all packing materials. Check the container for any loose parts.

C. Check air passages at front and rear of cabinet, making sure that no packing materials that may obstruct air flow through the power source.

D. Install the lifting eyebolt furnished with the power source into the top of the unit.

CAUTION

For lifting purposes and for keeping dust, moisture, and other foreign material from entering the power source, the lifting eyebolt must be fully tightened with a tool.

E. After selecting an installation site (see paragraph 2.1), place the power source in the desired location. The unit may be lifted either by using the lifting eyebolt or by forklift truck. If a forklift is used for lifting the unit, be sure that the lift forks are long enough to extend completely under the base.

CAUTION

Do not use filters on this unit as they would restrict the volume of intake air required for proper cooling. Output ratings on this unit are based on an unobstructed supply of cooling air drawn over its internal components. Warranty is void if any type of filtering device is used.

2.3 PRIMARY (INPUT) ELECTRICAL CONNECTION

This power source is a three-phase unit and must be connected to a three-phase power supply. It is recommended that the unit be operated on a dedicated circuit to prevent impairment of performance due to an overloaded circuit.

WARNING

ELECTRIC SHOCK CAN KILL! Before making electrical input connections to the power source, "Machinery Lockout Procedures" should be employed. If the connections are to be made from a line disconnect switch, place the switch in the off position and padlock it to prevent inadvertent tripping. If the connection is made from a fusebox, remove the corresponding fuses and padlock the box cover. If it is not possible to use padlocks, attach a red tag to the line disconnect switch (or fuse box) warning others that the circuit is being worked on.

A. The primary power leads must be insulated copper conductors. Three power leads and one ground wire are required. Either rubber covered cable or conduit (flexible or solid) may be used. Table 2-1 provides recommended input conductors and line fuse sizes.

B. Remove the top cover. Identify primary power input connections on the power switch, chassis ground lug on the "A" frame, and primary input terminal board. Refer to Figures 2-1 and 2-2.

C. When using the provided strain relief, refer to Figure 2.1 for proper cable strip lengths. It is important to follow the cable strip guide to ensure that if the primary input cable is ever pulled from the strain relief, the input conductors will be pulled from the ON/OFF power switch before the ground lead is pulled from the ground lug. Once stripped, thread the input and ground conductors through the large strain relief in the rear panel of the power source. Connect the ground wire to the terminal lug located on the right rear A-frame leg inside the power source. Connect the primary power leads to terminals L1, L2, and L3 on the input power switch. Secure the strain relief on the input cable.

WARNING

The chassis must be connected to an approved electrical ground. Failure to do so may result in electrical shock, severe burns or death.

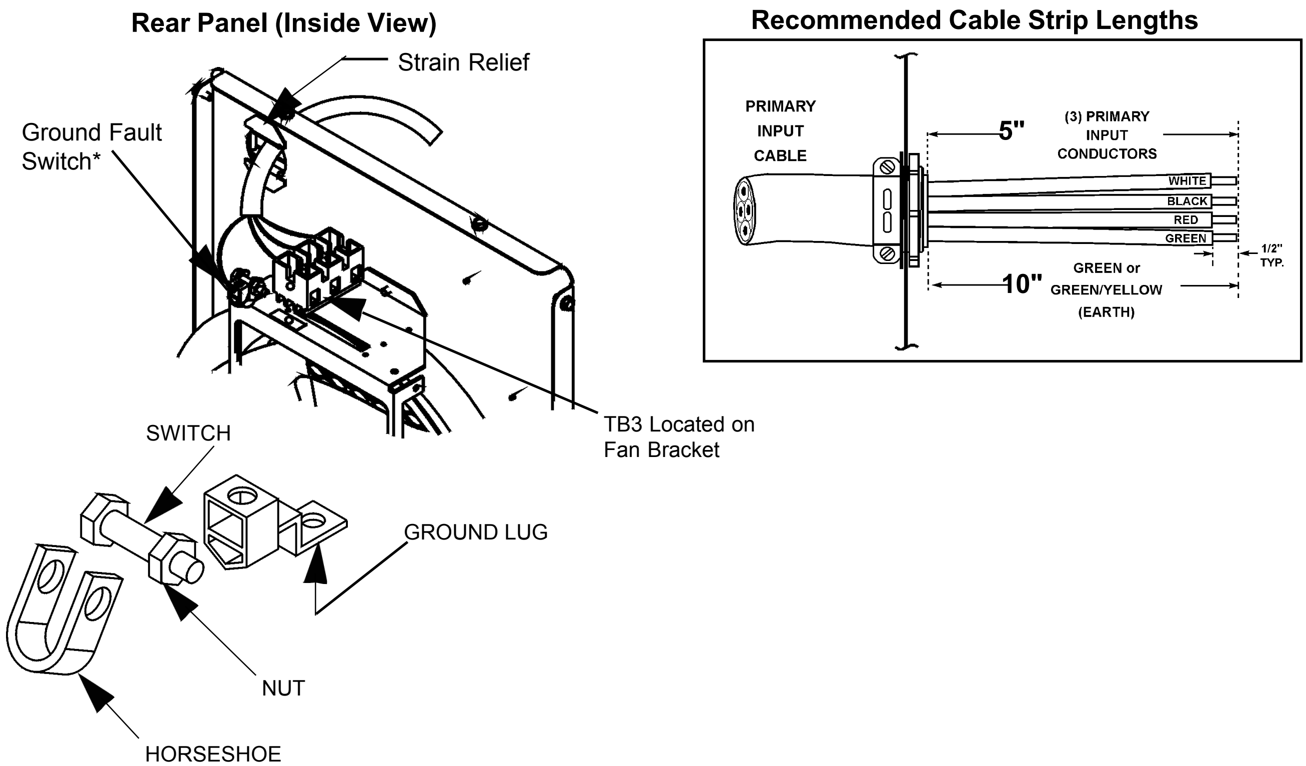
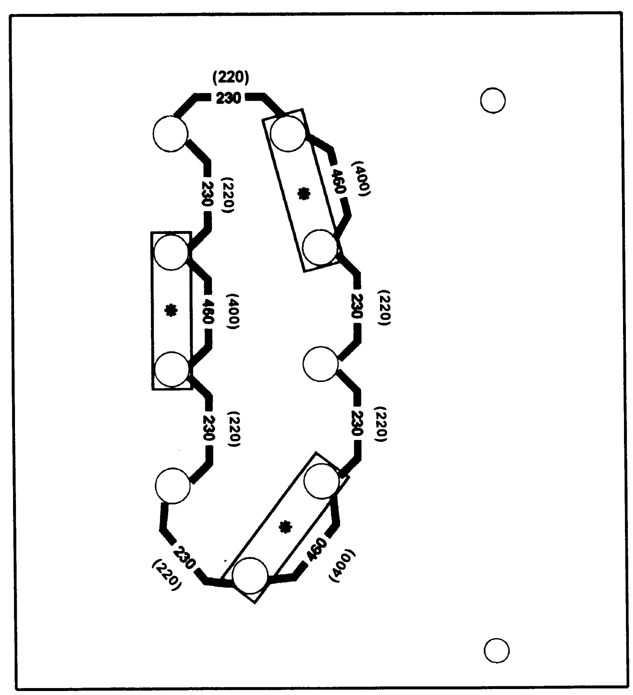


Figure 2.1 Connecting Primary Power Leads

Table 2.1 Recommended Input Conductor Size and Line Fuses

	Rated Input 100% Duty Cycle Rating Volts	Amps	Input & GND Conductor* CU/AWG	Fuse Size Amps
453CC	208	64	No. 6	90
	220	61	No. 6	80
	230	58	No. 6	80
	400	33	No. 10	40
	460	29	No. 10	40
	575	23	No. 12	30
553CC	208	82	No. 4	120
	220	77	No. 4	120
	230	74	No. 4	120
	400	43	No. 8	70
	460	37	No. 8	60
	575	30	No. 10	50

* Sized per National Code for 75° C rated copper conductors @ 40° C Not more than three conductors in a raceway or cable. Local codes should be followed if they specify sizes other than those listed above.



* Double Link Provided
( ) Connections for 50 Hz

Figure 2.2 Input Terminal Board

230/460 (220/400)V illustrated with voltage links in the factory supplied 460 volt configuration.

D. Check all connections for proper tightness. Ensure all connections are correct and well insulated.

E. Figure 2-2 illustrates the input voltage terminal board and the input voltage link connections. The particular voltages from which this power source may be operated are stated on the rating plate. The voltage links were factory set for highest voltage stated on the rating plate. If the power source is to be operated on another stated input voltage, the links must be reset for that particular input voltage. Always verify the input voltage and check the link arrangement regardless of factory setting. The voltage links are set up by re-configuring the copper link bars to the silk screened voltage designations for the desired voltage.

2.4 OUTPUT WELDING CONNECTIONS (SECONDARY)

! WARNING

Before making any connections to the power source output terminals, make sure that all primary input power to the machine is off.

The output terminals are located on the front panel (Figure 2.3). Two output terminals are provided. One NEGATIVE (-) terminal is located at the bottom right hand corner and the POSITIVE (+) terminal is located at the bottom left corner. The output cable connections will depend on the materials and welding process desired. Table 2-2 provides the recommended cable output sizes.

Table 2-2. Output Cable Sizes (Secondary)

Welding	Total Length (Feet) of Cable In Weld Circuit*				
Current	50	100	150	200	250
100	6	4	3	2	1/0
150	4	3	1	1/0	2/0
200	3	1	1/0	2/0	3/0
250	2	1/0	2/0	3/0	4/0
300	1/0	2/0	3/0	4/0	4/0
400	2/0	3/0	4/0	4/0	2-2/0
500	3/0	3/0	4/0	2-2/0	2-3/0

*Total cable length includes work and electrode cables. Cable size is based on direct current, insulated copper conductors, 100 percent duty cycle and a voltage drop of 4 or less volts. The welding cable insulator must have a voltage rating that is high enough to withstand the open circuit voltage of the machine.

2.5 CONTROL CONNECTIONS

Refer to Figure 2-3.

2.5.1 Remote Control (Optional)

This function is provided by an optional 14-pin receptacle (J2) located on the front panel directly below connector J1. It mates with a plug from any optional remote control device (see 1.4.2). This receptacle is operative only if the panel remote switches on the power source front panel are in the "Remote" position.

2.5.2 Auxiliary 115 V AC Receptacle (Option)

A 115 Vac receptacle is provided to supply power to accessories such as a water cooler, heated C02 regulator, or small hand tools. The receptacle is rated 115 Vac / 10 amps.

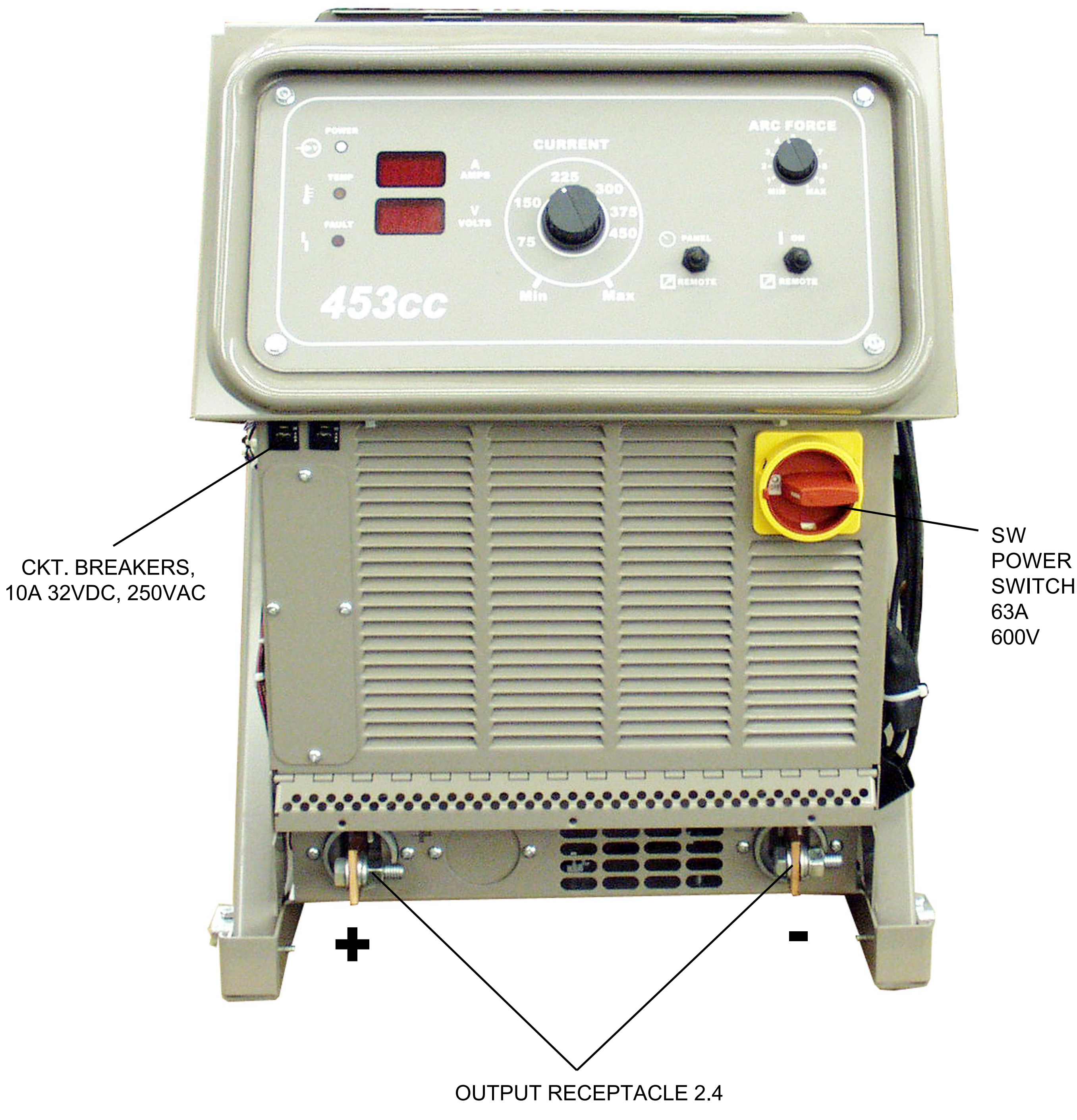
2.5.3 - 42V Circuit Breaker (CB1)

The 42V resettable circuit breaker (CB1) protects the 42 volt control circuitry against over current. (Table 52 provides troubleshooting information).

2.5.4 - 115V Circuit Breaker (CB2)

The 115V resettable circuit breaker (CB2) protects the 115 volt auxiliary receptacle and control circuitry against over current. (Table 5-2 provides troubleshooting information).

Figure 2.3 CONTROL CONNECTIONS



CAUTION

Never operate the power source with the cover re moved. In addition to the safety hazards, Improper cooling may cause damage to the components. Keep side panels closed when unit is energized. Welding helmet, gloves, and other personal protection should always be worn when welding.

3.1 CONTROLS (See Figure 3.1)

3.1.1 PowerSwitch(ON-OFF)/(I-O)

The power switch is located on the front panel of the power source. In the OFF ("0") position, the unit is shutdown however, power is still present at the switch itself. To totally shut down the power source, power must be disconnected at the line disconnect switch or the fuse box.

With the switch in the ON ("I") position, power is provided to the main transformer and the low voltage control circuitry.

3.1.1.1 Power Indicator

This white light will indicate that the power switch is in the ON position and power has been applied to the main transformer and low voltage circuitry.

3.1.2 Arc Force Control.

This control is used for stick welding only.The lower settings provide less short circuit current and a softer, more stable arc. The higher settings provide more short circuit current and a forceful, more penetrating arc. For most Stick welding, set the knob at 3 or 4 and readjust up (forceful) or down (softer) as desired.

3.1.3 Contactor, On/Remote Switch

The Contactor Control switch is located on the front panel of the power source. In the ON position, the solid state contactor is energized and output power is available at the output terminals. The REMOTE position allows the solid state contactor to be controlled from a remote control.

3.1.4 Current Panel/Remote Switch

With this switch in the PANEL position, output current is controlled by adjusting the potentiometer on the front panel to the desired output. In the REMOTE position, output is controlled using an optional remote control via receptacle J2.

3.1.5 Current Control

This control allows the operator to adjust the output current. Placing the Panel/Remote switch in the REMOTE position disables the current control on the front panel.

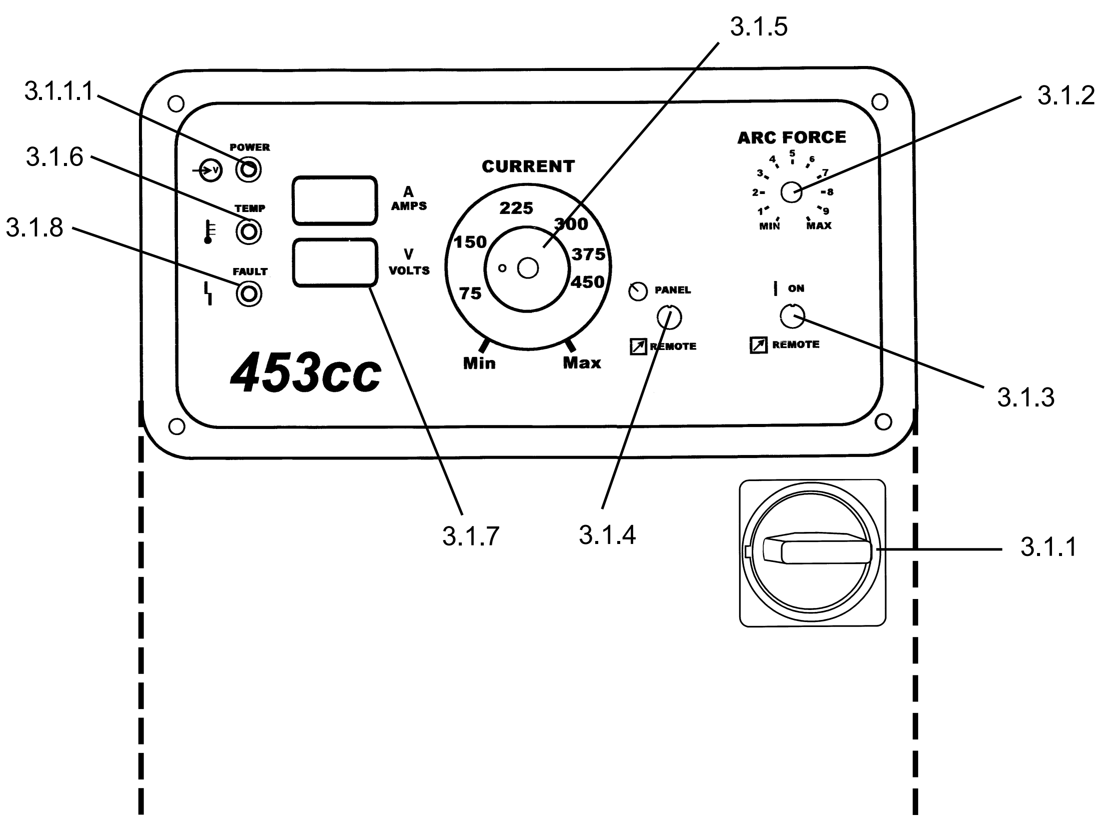


Figure 3.1 Control Locations (453cc illustrated)

3.1.6 Over Temperature Indicator (Temp)

This amber light will indicate when an internal overheating condition has occurred and one of the thermal switches has opened. User control of the solid state contactor will be interrupted and power source output will shut down to protect critical components. Once cooled to a safe temperature, the thermal switch will automatically reset and output control will be restored.

3.1.7 Voltmeter and Ammeter

A digital voltmeter and ammeter provides an accurate indication of dc output voltage and current.

3.1.8 Fault Indicator

If an optional External Ground Conductor Protection Kit was installed, this red light, when lit, will indicate that current was flowing through the external ground conductor. The power source output termirals are deenergized and the fault must be corrected before resuming operation.

3.2 OPERATION SET-UP

Prior to performing the steps below, open the wall disconnect switch or remove the fuse from the fuse box to electrically isolate the power source.

WARNING

ELECTRIC SHOCK CAN KILL! "Machinery Lockout Procedures" should be employed. If it is not possible to use padlocks, attach a red tag to the line disconnect switch (or fuse box) warning others that the circuit is being worked on.

3.2.1 Stick Welding (SMAW) Air Carbon Arc Gouging (ACAG) and Scratch Start Tig Welding (GTAW)

A. If stick welding or arc gouging, connect work cable to the workpiece and to the negative (-) terminal of the power source. Connect torch cable to the positive (+) terminal of the power source.

   If Tig welding, connect work cable to the workpiece and to the positive (+) terminal of the power source. Connect Tig torch cable to the negative(-) terminal of the power source.

B. Place the Power ON-OFF switch to the ON position or close the main(wall) disconnect switch.

C. Adjust the current control on the power source to the approximate desired welding current.

D. If stick welding, set the Arc Force control at 3 or 4 on the dial and readjust as necessary to obtain a softer or harder welding arc.

   For air gouging or Tig welding, set Arc Force control at zero (0).

E. If using a remote current control, such as HC-3B, place current and contactor switches in REMOTE positions. Note that the current range will be limited to the maximum setting on the power source's current control dial.

   If not using remote current control, place current switch to PANEL and contactor switch to ON.

F. Place the Power ON-OFF switch to the ON position.

G. To preset the approximate welding current, proceed as follows:

   1. Connect the electrode holder to the workpiece to create short.
   2. Place the contactor switch to the ON position.
   3. Set the Arc Force control to the minimum position.
   4. Place the Power On-Off switch to the ON position.
   5. By observing the digital ammeter,adjust Current Control to the desired current setting.
   6. Place Power On-Off switch back to OFF
   7. Then remove the holder from the workplace.

H. After setting the desired current and if using remote, turn switch back to REMOTE.

I. You are now ready to begin welding.

3.2.2 Mig Spray Am (GMAW) and Flux Cored (FCAW) Welding with "Off the Are" Wire Feeder.

Refer to wire feeder instruction manual for set-up and operating procedures.

4.1 GENERAL

⚠ CAUTION

If this power source does not operate properly, stop work immediately and investigate the cause of the malfunction. Maintenance work must be performed by an experienced person, and electrical work by a trained electrician. Do not permit untrained persons to inspect, clean, or repair this power source. Use only recommended replacement parts.

⚠ WARNING

ELECTRIC SHOCK CAN KILL! "Machinery Lockout Procedures" should be employed. If it is not possible to use padlocks, attach a red tag to the line disconnect switch (or fuse box) warning others that the circuit is being worked on. Placing the power switch in the off position does not remove all power from inside the power source.

4.2 CLEANING

Periodically, remove the cover from the power source and blow accumulated dust and dirt from the air passages and interior components by using clean low pressure air. The frequency cleaning is required depends upon the environment in which the power source is used.

It is imperative that all air passages be kept as clean as possible in order to allow adequate air flow to provide proper cooling.

After cleaning with low pressure air, check for and tighten any loose hardware, including all electrical connections. Check for frayed and/or cracked insulation on all power cables and replace if necessary.

⚠ WARNING

Failure to replace worn or damaged cables may result in a bare cable touching a grounded object. The resulting electrical arc may injure unprotected eyes and will present a serious fire hazard. Body contact with a bare cable, connector, or conductor may result in severe electrical shock, causing serious burns or death.

4.3 INSPECTION AND SERVICE

Keep the power source dry, free of oil and grease, and protected at all times from damage by hot metal and sparks.

4.3.1 Fan Motor

Keep the fan motor free of accumulated dust and dirt.

4.3.2 Transformer

Other than periodically cleaning the dust and dirt from the transformer, no maintenance is required. Ensure that only clean, dry, low pressure air is used.

4.3.3 Control Circuits

These circuits are protected by two 10 amp circuit breakers mounted in the front panel. If these open, the contactor will not operate.

4.3.4 Over Temperature Protection

If the power source reaches an abnormally high internal temperature, the thermal protection will deenergize the contactor circuit, shutting down the power source but leaving the cooling fan on. After the power source has cooled to a safe level, the thermal protection will automatically reset. While deenerigized, the contactor can not be operated.

4.3.5 Digital Voltmeter/Ammeter Calibration

To verify the accuracy of the digital voltmeter/ammeter combination, the following procedure can be performed periodically:

1. Place the Panel/Remote switch in Panel position.
2. Disconnect cables from the output terminals and then connect an accurate DC voltmeter to the output terminals.
3. Open the front control panel by removing the two mounting screws from the upper corners. Locate the J9 jumper plug on the control pc board and remove the plug. The J9 jumper plug is located just left of the meter pc board ribbon cable connection plug J10.
4. Place the Contactor switch in the On position
5. With the primary input power on, turn the Current control knob until you get 25V on the DC voltmeter. Compare the reading with the reading on the digital voltmeter on the front panel.
6. If there is a difference in the voltage readings, remove meter board from its four mounting posts, and adjust the trimpot (R13) on the meter board with a small screwdriver until the digital meter reading matches the DC voltmeter reading. When satisfied, reassemble meter board, reconnecting J9 jumper plug, and reassemble front control panel.

5.1 GENERAL

WARNING

DISCONNECT primary power at wall switch, or circuit breaker, before attempting inspection or work inside the power source.

If the power source is operating improperly, the following troubleshooting information may be used to locate the source of the trouble.

Check the problem against the symptoms in the following troubleshooting guide (Table 5-2.) The remedy for the problem may be quite simple. If the cause cannot be quickly located, open up the unit and perform a simple visual inspection of all the components and wiring. Check for proper terminal connections, loose or burned wiring or components, blown fuses, bulged or leaking capacitors, or any other sign of damage or discoloration.

5.2 TESTING AND REPLACING BRIDGE ASSEMBLY COMPONENTS

The SCRs used in the power source are devices which allow current to flow in only one direction. The SCRs are designed to provide long trouble-free operation; however, should a failure occur, they may require replacement.

A. Testing SCRs.

1. Remove top and right side panel from the power source.
2. Locate the main rectifier assembly containing the SCRs.
3. Electrically isolate main bridge assembly by disconnecting resistor R5.
4. With the ohmmeter on RX1 scale, place the positive lead on the anode (end of SCR with screw threads) and the negative lead on the cathode (positive output terminal on the front panel). The meter should read minimum of 5 megohms.
5. Reverse leads and check each SCR. All readings should again show high resistance. The SCRs are bad if they show low resistance in either direction.
6. Check the gate circuit on the SCRs by installing a jumper from the gate lead to the anode of the SCR. The meter should read less than 5 ohms. Remove the jumper from the gate. The meter reading should increase (3050 ohms).

B. Replacing the SCRs.

IMPORTANT

1. When replacing SCR's, make sure mounting surfaces are clean. Using Alcoa No. 2 EJC Electrical Joint Compound or an equivalent, apply a thin coat to the SCR mounting surface and positively locate in place on the heatsinks. Place the clamp in position with the bolts through the holes in the heatsinks and proceed as follows:
2. Tighten the bolts evenly until finger tight noting that the nuts are not rotating.
3. Tighten the bolts 3/4 turn plus an 1/8 turn using a socket wrench on the bolt heads and rotating only in 1/4 turn increments plus 1/8 turn alternating between the bolts noting that the nuts are not rotating.

5.3 PCB VOLTAGE TESTS

WARNING

Electrical service and repair should be attempted only by a trained electrician.

When making PCB voltage measurements, refer to the schematic diagram. All voltage readings are taken with the front access panel open and the power switch "ON".

Table 5.1 SCR Voltages (Output)

FROM	TO	READING
P8-5	OTB+	+10 V dc
P8-7	OTB+	0-10 V dc*
P6-6 (SCRI) P6-5 (SCR2) P6-4 (SCR3) P6-3 (SCR4) P6-2 (SCR5) P6-1 (SCR6)	OTB+	.3 V dc with contactor on

* Varies with setting of VCP (R1)

CONDITION		ACTION
Unit Inoperative	A.	No input power. Check main line (user's) switch fuses -- replace if needed.
	B.	Poor or improper input (terminal board) connections.
	C.	Defective on/off switch on front panel -- replace.
	D.	Main transformer overheating. Also check for proper cooling, proper primary hookup, or shorted turn on secondary.
	E.	Fan motor not operating -- check motor and leads.
	F.	Gound fault indicator "ON". - Check for cause and correct. Turn power switch "OFF" then "ON" to reset.
	G	Loss of primary phase. Check that LED on control PCB is lit. If not, find & replace defective fuse.
No Output - Fan Running	A.	Poor or improper electrical input -- check input connections on TB.
	B.	Poor connections at output terminals/work station -- check, tighten or replace.
	C.	Main transformer overheating -- thermal switches tripped due to restricted cooling air. Temperature light on front panel will be lit. Let unit cool down,
	D.	Solid-state breaker tripped due to current overload.
	E.	PC board defective or loose PC board connector(s) -- if loose, reinsert; if defective, replace.
Limited Output or Low Open-Circuit Voltage	A.	Input voltage jumper links on terminal board improperly set -- check for proper voltage. Poor output connections. Take apart, clean, and reassemble.
	B.	Unit may be single phasing -- check incoming power for three phases.
	C.	Panel-Remote switch in Remote position and remote voltage pot disabled.
Erratic Weld Current	A.	Welding cable size too small -- use correct cables.
	B.	Loose welding cable connection (will usually get hot) -- tighten all connections.
	C.	Improper wire feeder setup.
	D.	Defective SCR in bridge rectifier.
	E.	PC board defective -- replace.
High Output, No Voltage Control	A.	PC board defective or loose -- reset and/or replace board.
No 115 Volt ac Output	A.	Circuit breaker tripped. Check 42V CB1 and 115V CB2 -- Reset.
Line Fuse Blows When Power Source is First Turned On	A.	Shorted SCR in Main Bridge -- replace.

6.1 GENERAL

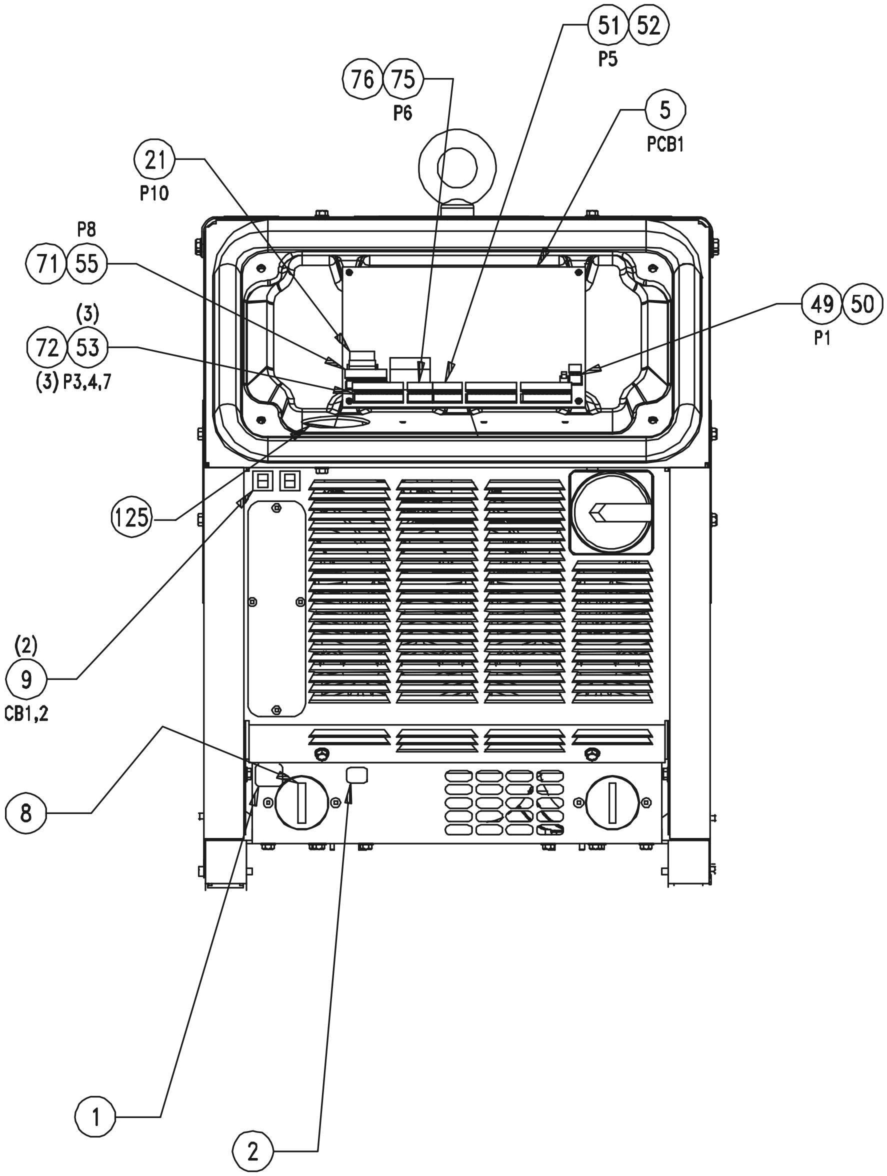
Always provide the series or serial number of the unit on which the parts will be used. The serial number is stamped on the unit nameplate.

6.2 ORDERING

To assure proper operation, it is recommended that only genuine ESAB parts and products be used with this equipment. The use of non-ESAB parts may void your warranty.

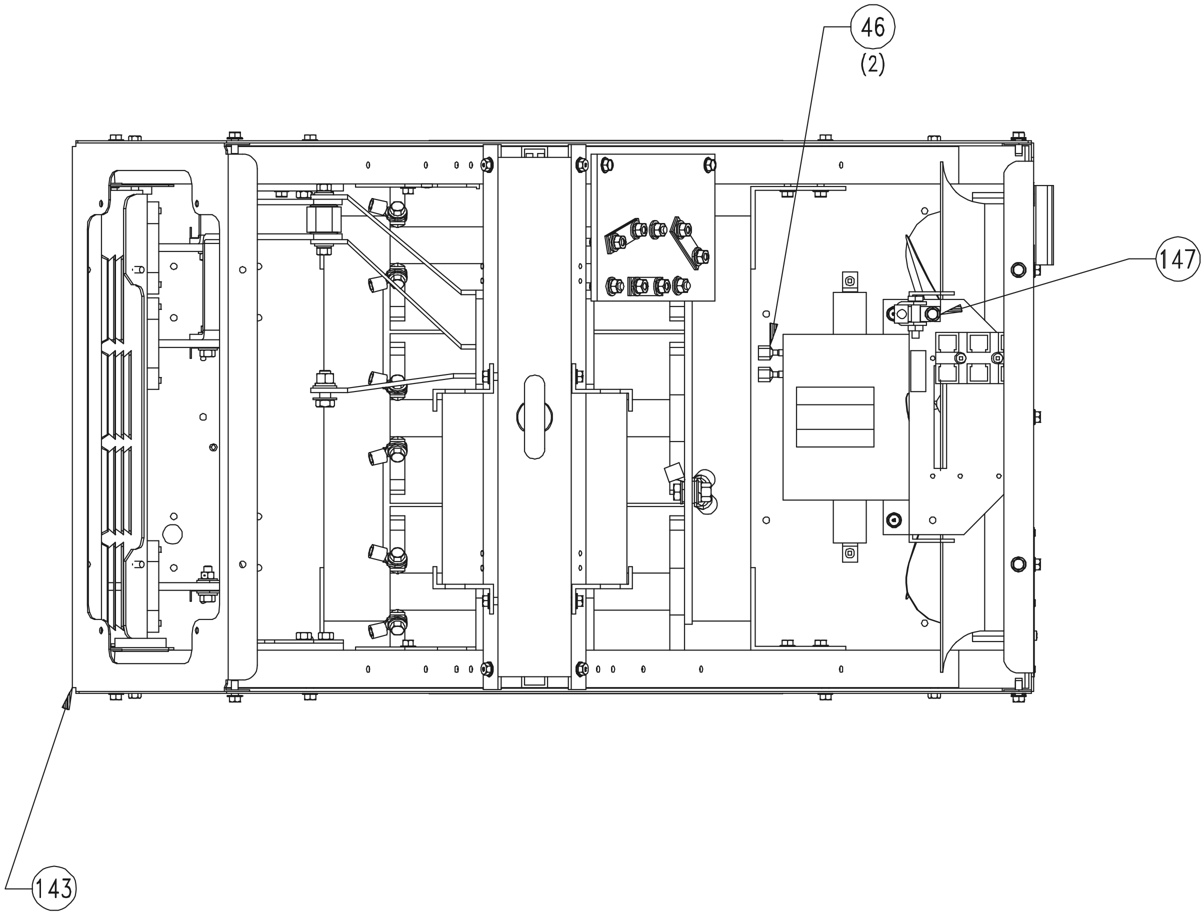
Replacement parts may be ordered from your ESAB distributor. For a list of Authorized Distributors in your area, contact ESAB at 1-800-ESAB-123.

For your convenience an ESAB Communication Guide listing important contact phone numbers has been printed on the rear cover of this book.



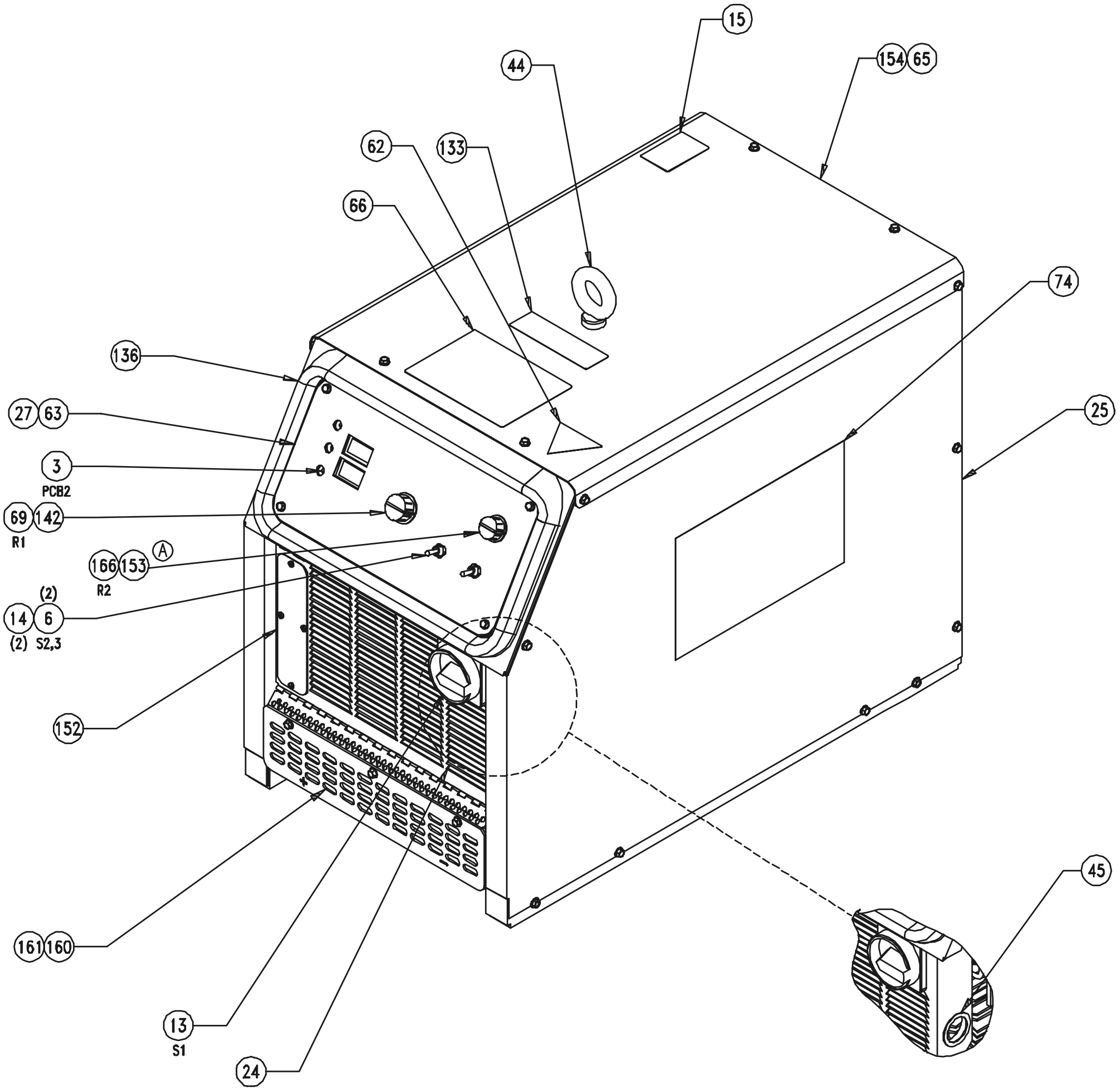
453cc-553cc View 1 - Front





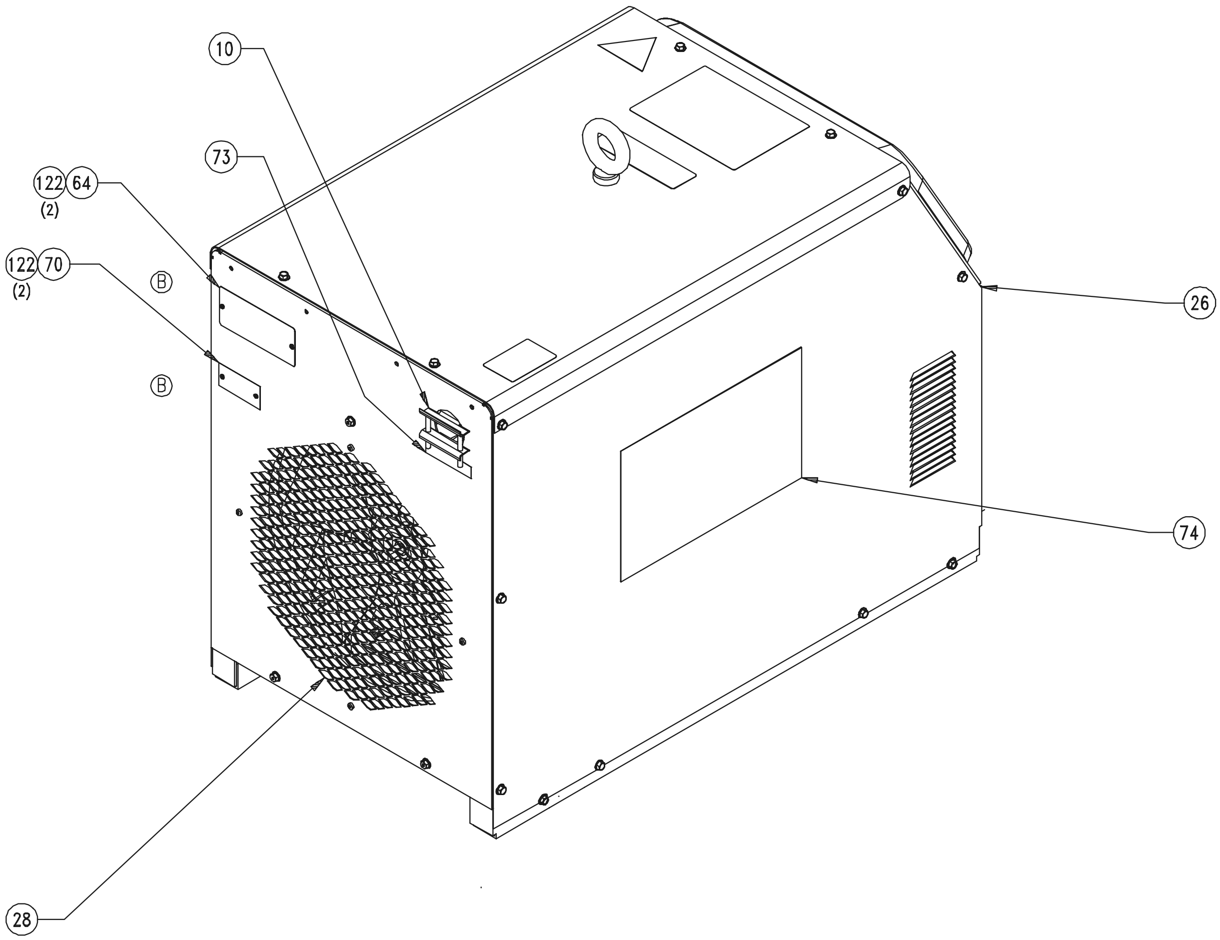
453cc-553cc View 2 - Top Panel





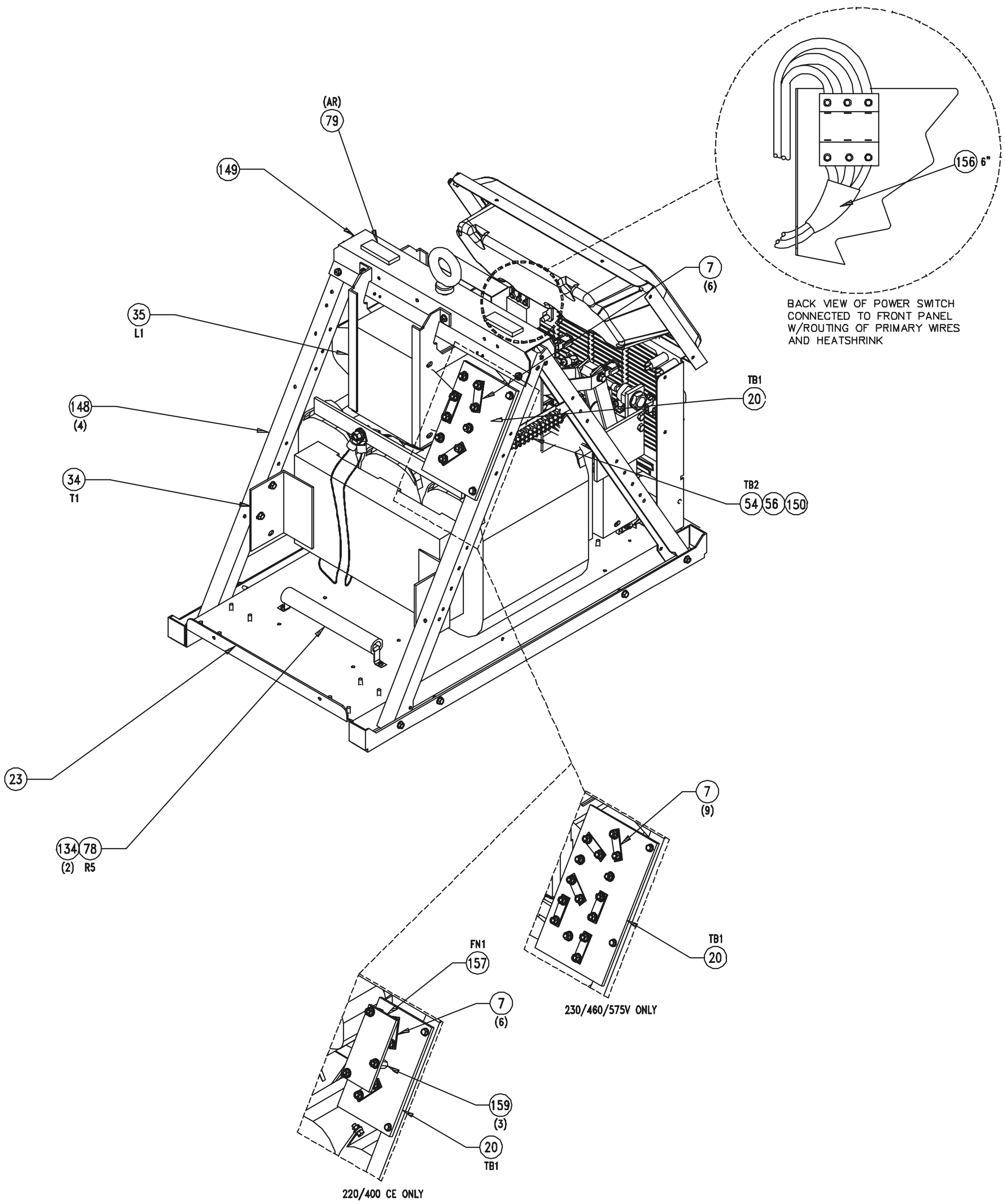
453cc-553cc View 3 - Angled Front





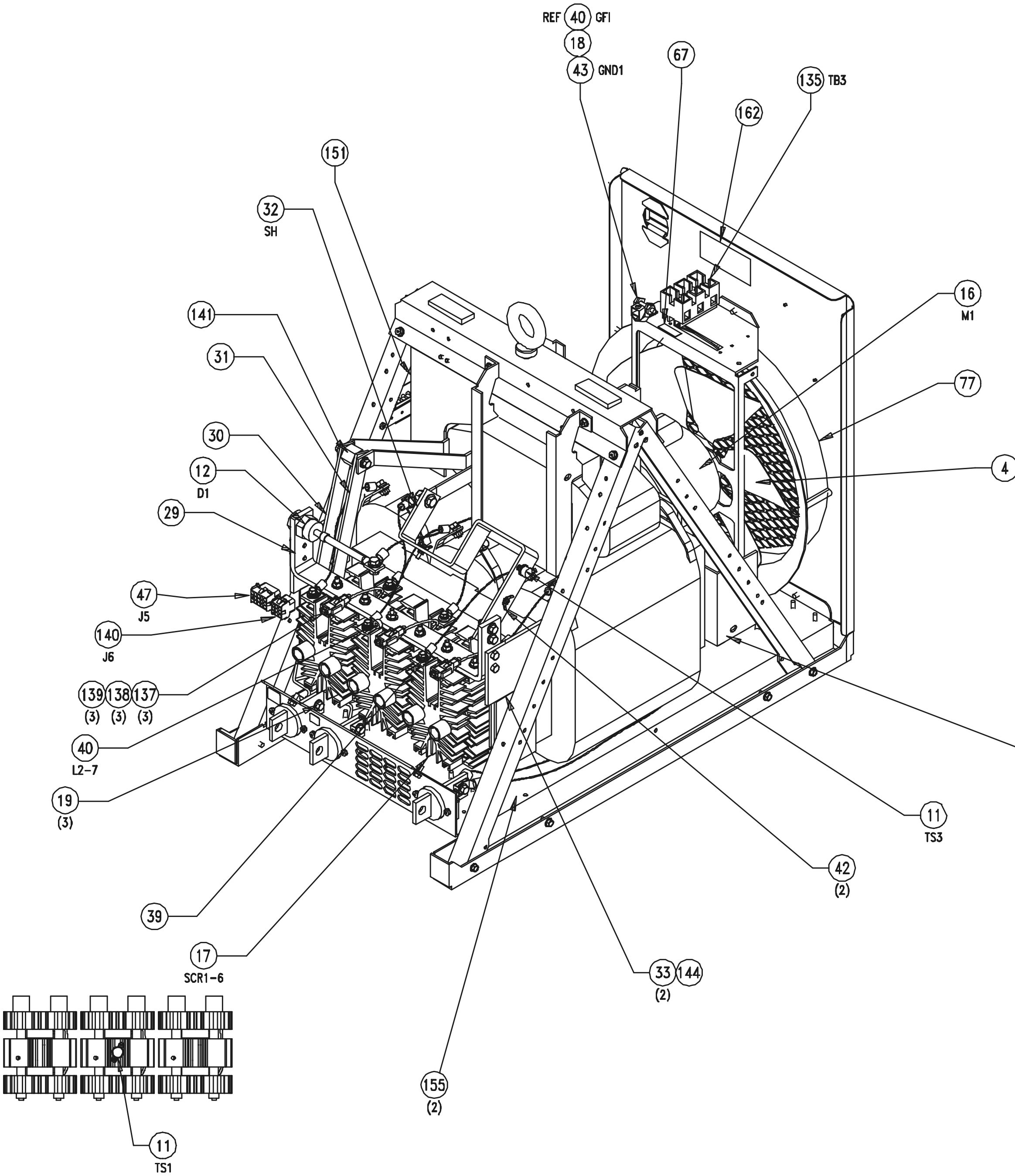
453cc-553cc View 4 - Rear





453cc-553cc View 5 - Internal Rear View



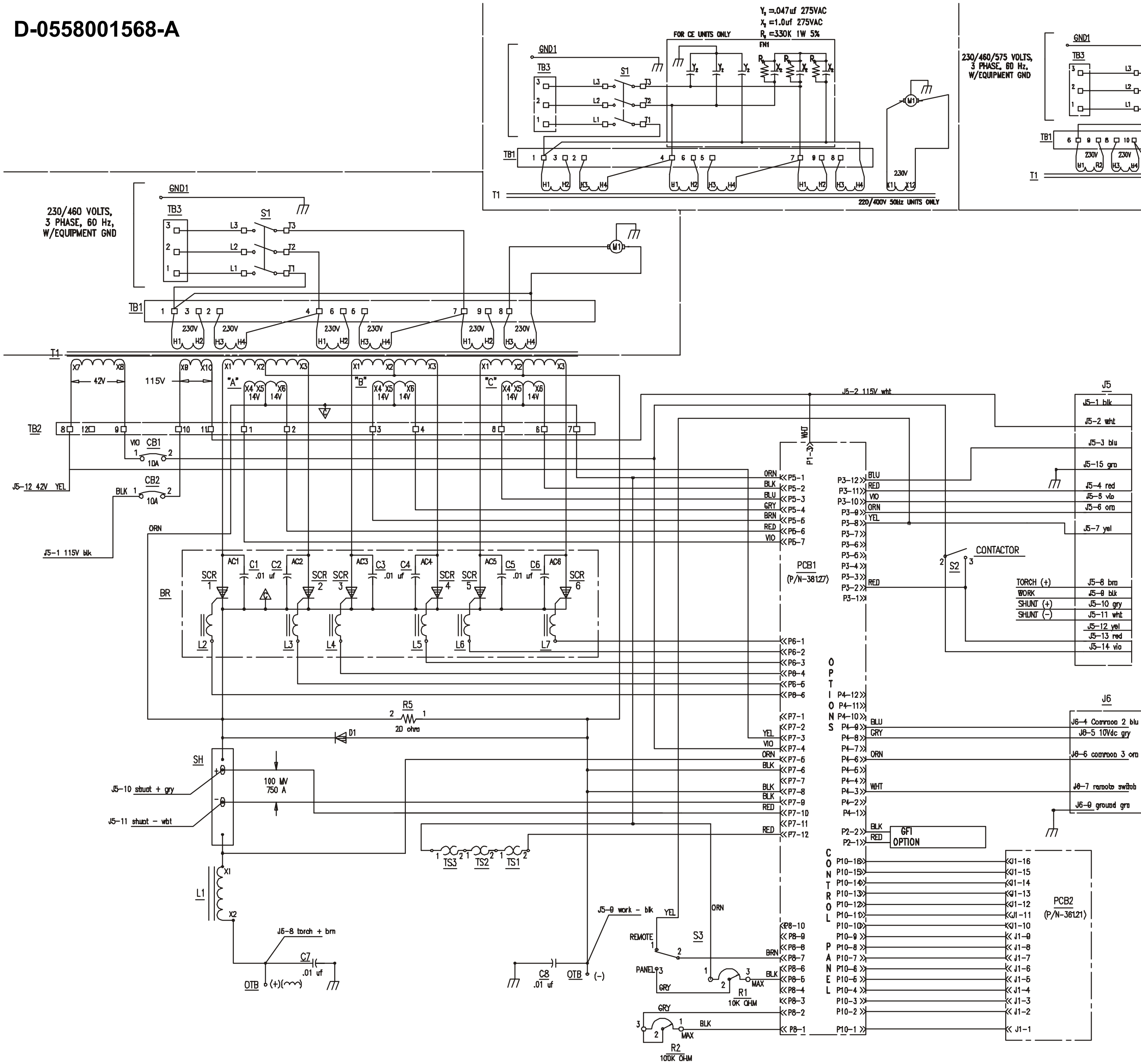


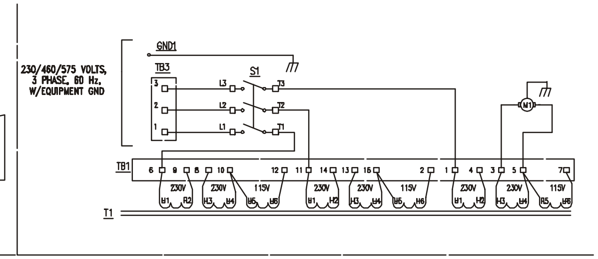
453cc-553cc View 6 - Internal Front View

LEGEND

ITEM NUMBER QUANTITY

D-0558001568-A



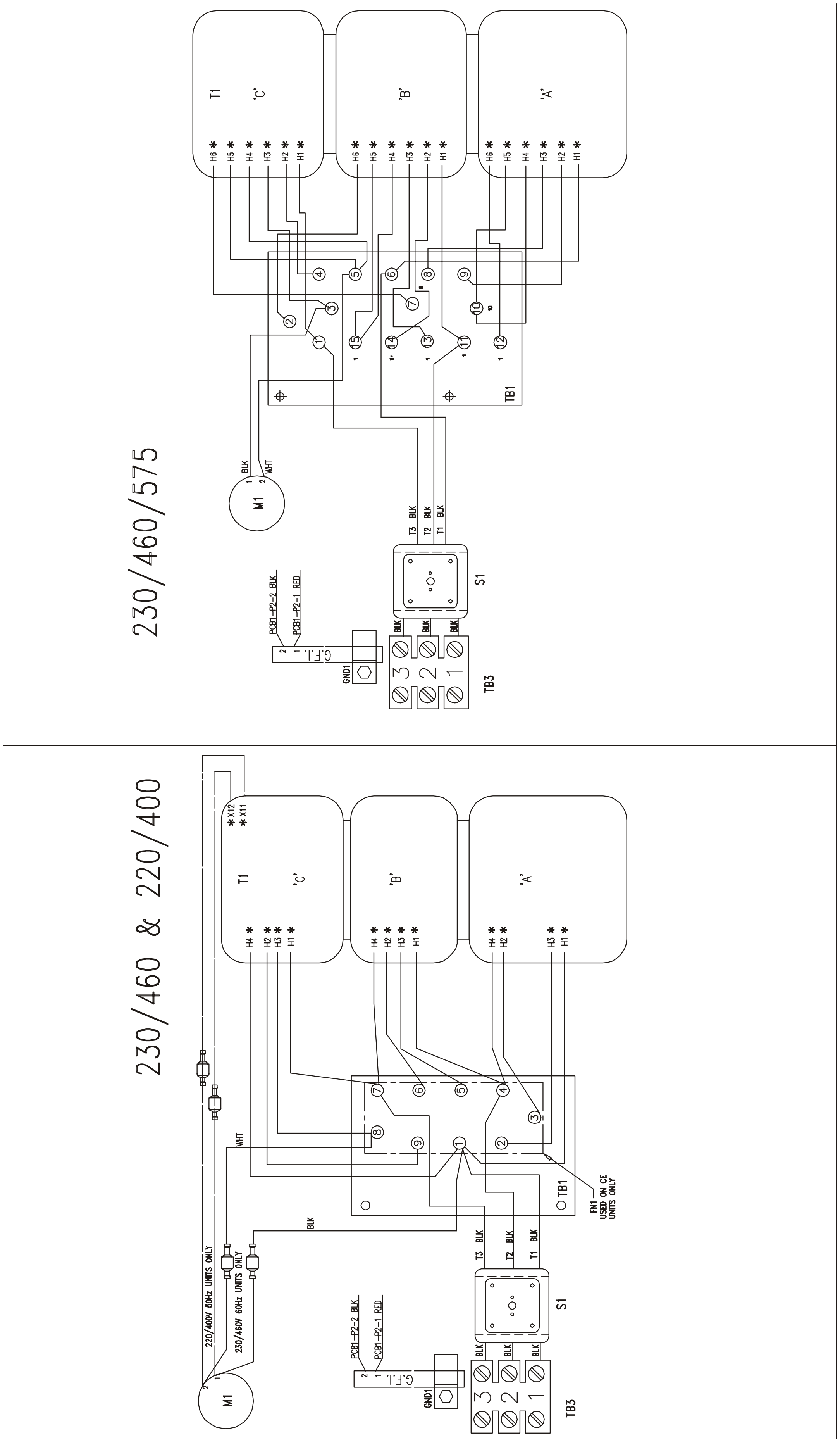


NOTES:

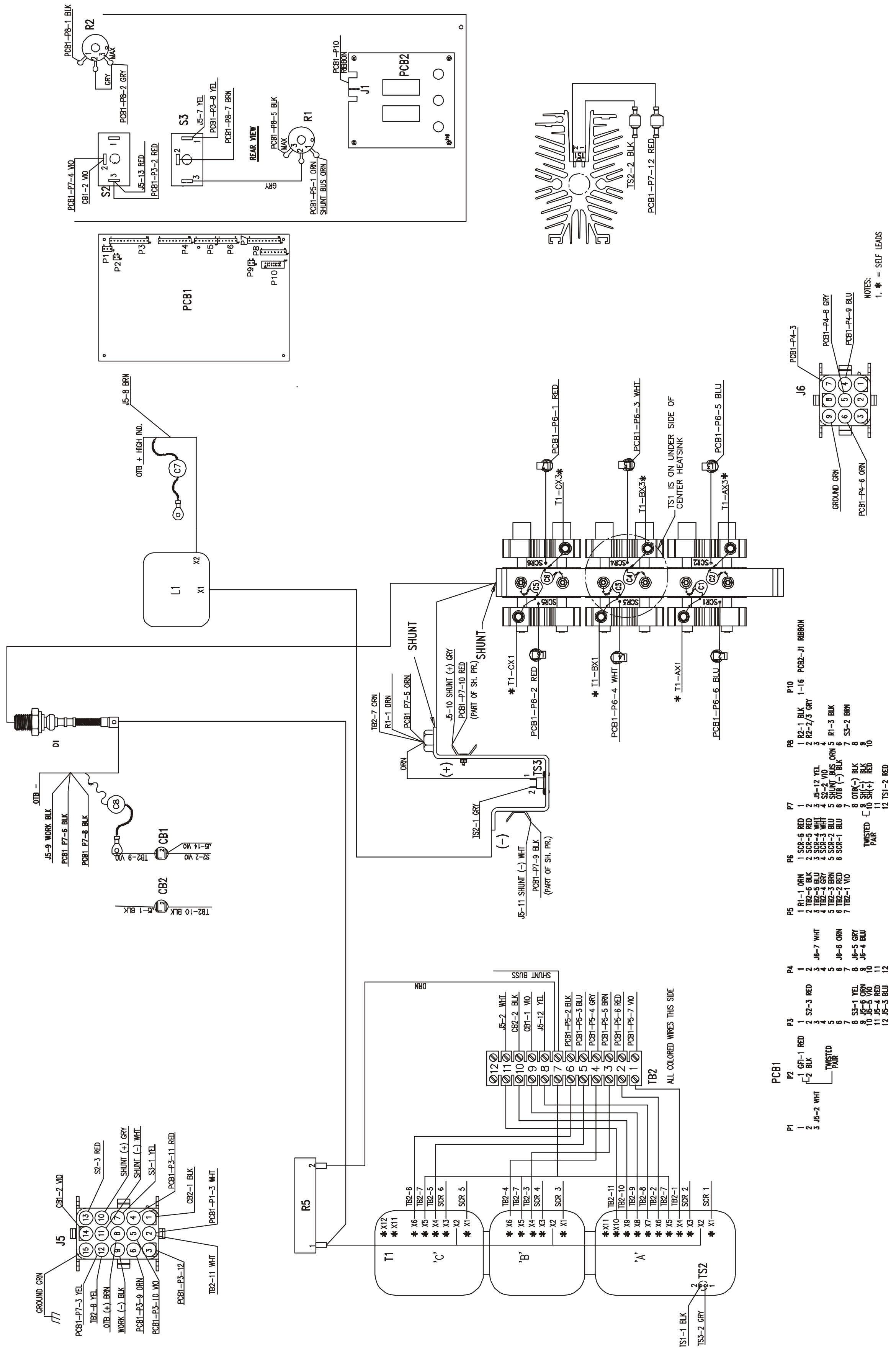
1. REFER TO WIRING DIAGRAMS FOR ALL CONNECTION POINTS.
2. USE TYWRAPS 631507 (ITEM 41), 99511578 (ITEM 130), 180W66 (ITEM 145), 180W68 (ITEM 146). TO CONFINE LOOSE WIRE AS REQUIRED. USE 71200732 (ITEM 123) TO SECURE FILTER CAPACITORS. USE HEAT SHRINK 90863007 (ITEM 126), 90863202 (127) AND 90863203 (ITEM 128) TO INSULATE BARRELS OF TERMINALS.
3. APPLY ELECTRICAL JOINT COMPOUND (ITEM 124) TO ALL COPPER TO COPPER, ALUMINUM TO COPPER AND ALUMINUM TO ALUMINUM CONNECTIONS.
4. CUT FAN MOTOR 82062334 (ITEM 16) LEADS TO 10" FROM MOTOR AND INSTALL FASTONS 950905 (ITEM 46).
5. INSTALL FAN MOTOR 82062334 (ITEM 16) WITH CAPACITOR IN UP POSITION.
6. BEFORE ASSEMBLING TURN POTS 13730632 (ITEM 69) & 892W64 (ITEM 166) COUNTERCLOCKWISE TO MINIMUM POSITION. POINTER TO BE AT "MIN" DESIGNATION SHOWN ON CONTROL PANEL.
7. CERTAIN ITEMS CALLED FOR AND SHOWN ON THESE DRAWINGS ARE ACTUALLY PART OF THE WIRE KITS.
8. ITEMS 672786 (ITEM 44), 8950219 (ITEM 10), AND TAG (ITEM 60) MUST BE SHIPPED WITH MACHINE.

453cc-553cc Schematic Diagram- 50/60 HZ

D-0558001569



453cc-553cc Wiring Diagram- Primary 3 PH



453cc-553cc Wiring Diagram Secondary - 50/60 HZ

D-0558001570-A

Bill of Materials
453cc/553cc DC Welding Power Source

ITEM NO.	PART OR CODE NO.	QTY.	DESCRIPTION	SYMBOL
1	954838	1	LABEL SUBARC STICK	
2	954839	1	LABEL MIG	
3	836121	1	PCB DIGITAL METER	PCB2
4	836173	1	BLADE FAN 14"	
5	838127	1	PCB CONTROL	PCB1
	838128	1	CONTROL	PCB
6	8634515	2	SW TGGL SPDT 2 POS 15A 125V	S2,3
7	8672065	6	STRAP TERMINAL	
8	8678025	2	TERM AY	
9	8950122	2	CKT BREAKER 10A 32VDC 250VAC	CB1,2
10	8950219	1	RELIEF STRAIN 2.00	
11	8950711	2	SW THERMAL 194F	TS1,3
12	8950768	1	DIODE FWD 300V 300A	D1
13	836107	1	SW PWR DISC 63A 600V	S1
	8950945	1	SW PWR DISC 100A 600V	S1
14	8951474	2	SW SEAL BLACK	
15	8954008	1	LABEL DANGER HIGH VOLTAGE	
16	82062334	1	MOTOR FAN 1/3 HP 1625RPM	M1
17	80558001024	3	SCR ASSY	SCR1-6
18	34149	1	CLIP ANNEALED	
19	34916	3	BUSBAR TAB	
20	36091	1	BOARD INPUT TERMINAL 230/460V	TB1
	136110	1	BOARD INPUT TERMINAL 230/460V/575	TB1
	32236	1	BOARD INPUT TERMINAL 220/400V	TB1
21	36092	1	CABLE DIGITAL METER PCB	P10
22	36635	4	CLIP SKID	
23	37861GY	1	BASE	
24	37862GY	1	PANEL FRONT BOTTOM	
25	37863YL	1	PANEL RIGHT SIDE	
26	37864YL	1	PANEL LEFT SIDE	
27	37865	1	CONTROL PANEL	
28	37867GY	1	PANEL REAR	
29	37868	1	BRIDGE BUSBAR	
30	37869	1	HIGH TAP INDUCTOR BUSBAR	
31	37870	1	LOW TAP INDUCTOR BUSBAR	
32	0558001037	1	SHUNT	SH
33	37872	2	INSULATOR KYDEX	
34	836430	1	XFMR MAIN 230/460 453CC	T1
	836626	1	XFMR MAIN 230/460/575V 453CC	T1
	836622	1	XFMR MAIN 220/400 453CC	T1
	836610	1	XFMR MAIN 230/460 553CC	T1
	836684	1	XFMR MAIN 230/460/575V 553CC1T1	
	836687	1	XFMR MAIN 220/400 553CC1T1	
35	C-836426	1	INDUCTOR	L1
36	0558001568	1	SCHEMATIC DIAG 453CC/553CC 50/60HZ	
37	0558001569	1	WIRING DIAG PRI 3 PH AFRAME 453CC/553CC	
38	0558001570	1	WIRING DIAG SECONDARY 453CC/553CC 50/60HZ	
39	0558001329	1	KIT WIRE PRI 453CC	
	0558001879	1	KIT WIRE PRIMARY 553CC	
40	0558001330	1	KIT WIRE SEC 453CC/553CC	

Bill of Materials
453cc/553 DC Welding Power Source

ITEM NO.	PART OR CODE NO.	QTY.	DESCRIPTION	SYMBOL
41	631507	AR	TYWRAP MEDIUM	
42	634220	2	TAB	
43	647361	1	GND1 LUG TERMINAL 2-8 WIRE 1/4 STUD	
44	672786	1	BOLT EYE .75-10 X 2.00	
45	950167	1	GROMMET RUB 1.12 ID X 1.50 GD X .06 W	
46	950905	1	TERM IL/M .250 TS X 14-16 AWG	
47	951504	1	J5 PLUG HOUSING 15 POS	
49	952067	1	CONNECTOR 20 AWG 3 PIN	P1
50	952068	1	MTA-156 COVER 3 PIN	
51	952070	1	CONNECTOR 20 AWC 7 PIN	P5
52	952071	1	MTA-156 COVER 7 PIN	
53	952072	3	CONNECTOR 20 AWG 12 PIN	P3,4,7
54	952073	1	TERM BLOCK 12 POS	TB2
55	952081	1	CONNECTOR 20 AWG 10 PIN	P8
56	952155	1	PLASTIC MARKER (1-12)	
59	952243	1	PALLET 42.00	
60	954046	1	TAG WARRANTY ESAB	
62	954506	1	LABEL ISO 9002	
63	954911	1	OVERLAY 453CC	
	954910	1	OVERLAY 553CC	
64	954855	1	LABEL RATING 453CC 230/460	
	954856	1	LABEL RATING 553CC 230/460	
	954857	1	LABEL RATING 453CC 230/460/575	
	954858	1	LABEL RATING 553CC 230/460/575	
	954859	1	LABEL RATING 453CC 220/400	
	954860	1	LABEL RATING 553CC 220/400	
65	954912	1	LABEL SCHEM 230/460V & 220/400 & 575	
66	2091514	1	LABEL WARNING WELD AND CUT	
67	2091558	1	LABEL GND BLK .50 X 1.38	
69	13730632	1	POT LIN 10K 2W .88L	R1
70	13730763	1	NAME PLATE CODE SERIAL STOCK	
71	13731781	1	MTA-156 COVER 10 PIN	
72	13732431	3	MTA-156 COVER 12 PIN	
73	13732733	1	LABEL FOR INSTALL USE COPPER WIRE ONLY	
74	13734588	2	LOGO ESAB CLEAR	
75	13735311	1	CONNECTOR 20 AWG 6 PIN	P6
76	13735312	1	MTA-156 COVER 6 PIN	
77	13735508	1	SHROUD FAN	
78	17300020	1	RES RW FIXD ST 300W 10% 20.00	R5
79	22993477	AR	RUBBER .188 X .500	
80	61212092	AR	BOLT LAG 1/4-20 X 1.50 LG	
122	65509506	AR	RIV BLD AL 1/8 GRIP .251-.312	
123	71200732	AR	ADH SI-RBR CLEAR	
124	73585980	AR	CNPD ELEC JOINT ALCOA 2 EJC	
125	79900317	AR	INSULATOR SEALING 3.75 X .125	
126	90863007	AR	TUBING HEAT SHRINK .250 ID BLK	
127	90863202	AR	TUBING HEAT SHRINK 3/4 ID CLEAR	
128	90863203	AR	TUBING HEAT SHRINK 5/8 ID CLEAR	
129	99510047	AR	VINYL SLEEVING 7/8	
130	99511578	AR	SNAP IN TIE BASE .218	

Bill of Materials
453cc/553cc DC Welding Power Source

ITEM NO.	PART OR CODE NO.	QTY.	DESCRIPTION	SYMBOL
133	99512240	1	LABEL CAUTION LIFT EYE	
134	99512558	2	BRACKET RESISTOR #18	
135	0558001010	1	TERMINAL BLOCK 3 POS	TB3
136	0558001011	1	BOX PCB GRAY	
137	0558001012	3	PLUG HOUSING 2 POS	
138	0558001014	3	SEAL WIRE 2 POS	
139	0558001015	3	SEAL INTER	
140	0558001016	1	CAP 9 POS	J6
141	0558001018	1	INSULATOR STAND OFF	
142	0558001019	1	KNOB 1.57 DIA	
143	0558001032GY	1	PANEL FRONT TOP	
144	0558001038	1	INSULATOR	
145	180W66	AR	TYWRAP LARGE	
146	180W68	AR	TYWRAP SMALL	
147	36043GY	1	BRACKET FAN	
148	36048GY	4	LEG AFRAME	
149	36049GY	1	BAIL LIFTING	
150	36070GY	1	BRACKET TERMINAL BOARD MTG	
151	36642GY	1	BAFFLE	
	36140GY	1	BAFFLE	
152	37902GY	1	BLANKING PLATE	
153	0558001818	1	KNOB 01.37 A	
154	37866YL	1	PANEL TOP	
155	90861100	AR	TUBING INSULATING VINYL 105' C RATING 9" LG	
156	90863005	AR	TUBING HEAT SHRINKABLE 6" LG	
157	838100	1	CE FILTER ASSY	FN1
159	952223	3	STAND OFF 1/4-20 X .75	
160	0558001331G	1	HINGE ACCESS	
161	0558001332G	1	PANEL ACCESS GRAY	
162	A-954864	1	LABEL THREE PHASE	
166	A-892W64	1	POT LIN 100K 2W	R2
167	10981006	AR	SOLDER 60/40 ROSIN	

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